March 29, 1949. G. F. COUCH 2,465,966

RAILWAY TRUCK

Filed Jan. 7, 1944 2 Sheets-Sheet 1

Fig. 1.

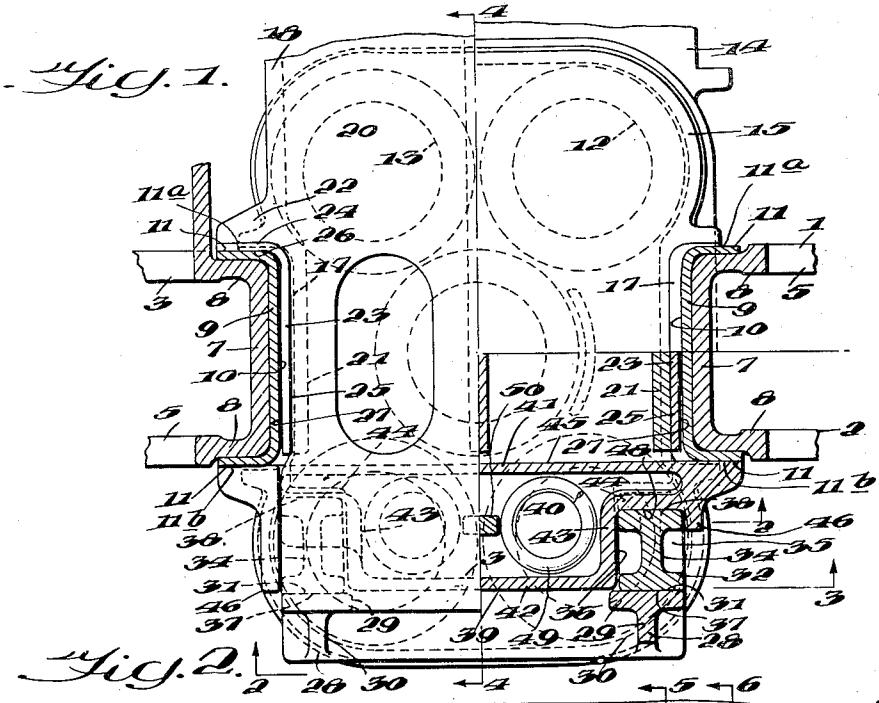
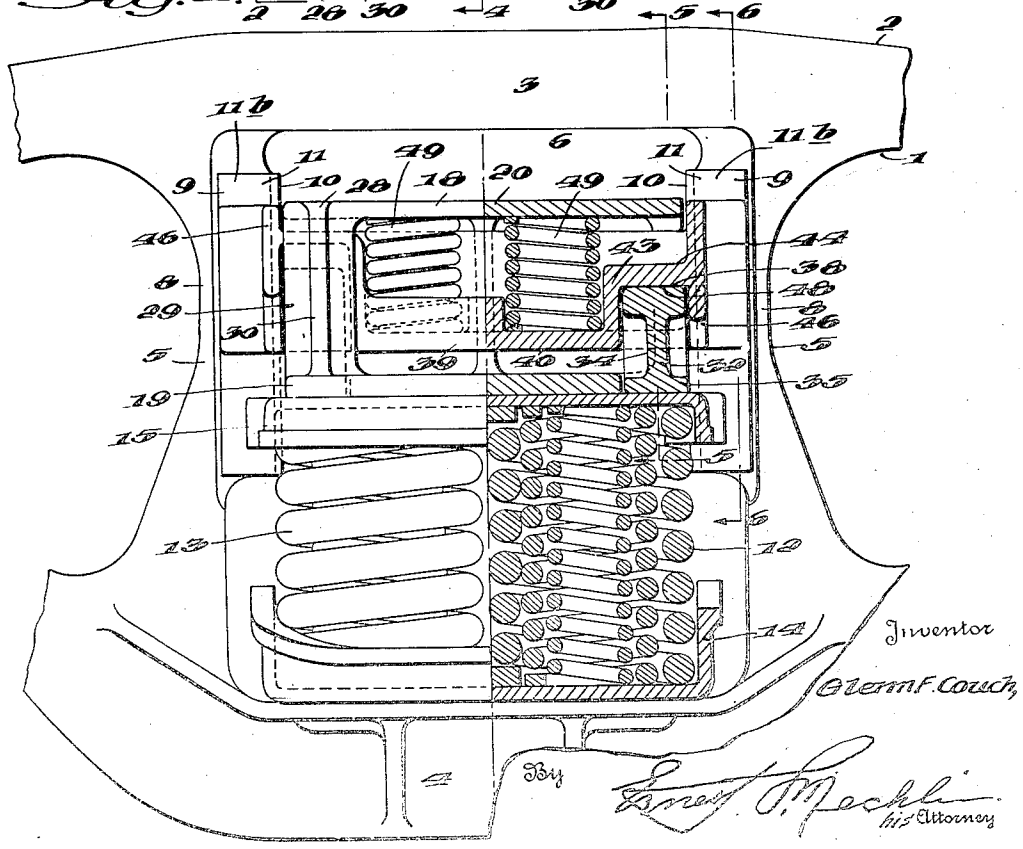


Fig. 2.



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Filed Jan. 7, 1944 2 Sheets-Sheet 2

Fig. 4.

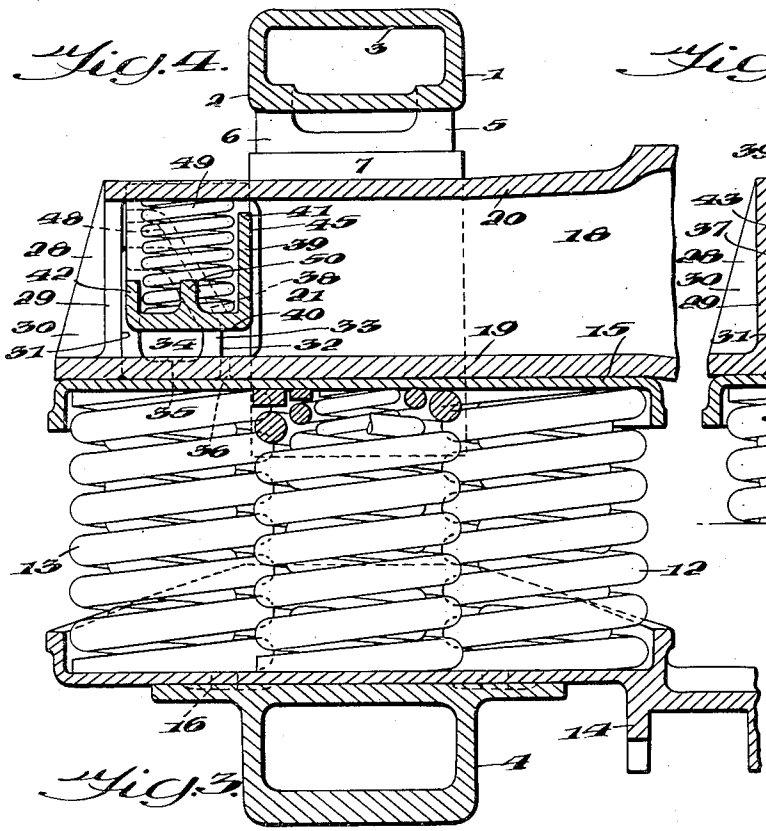


Fig. 5.

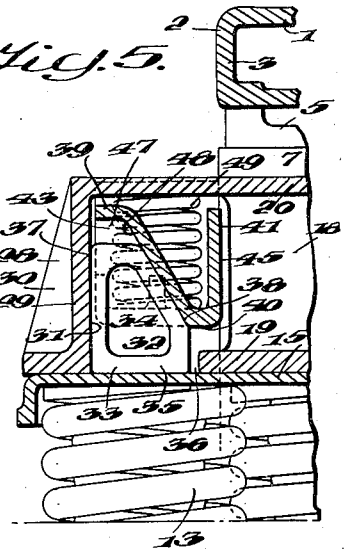


Fig. 6.

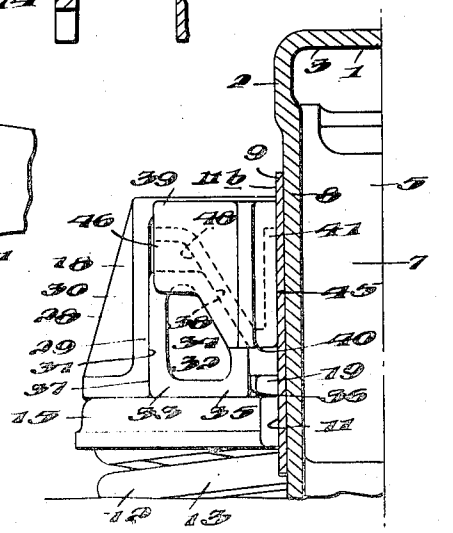
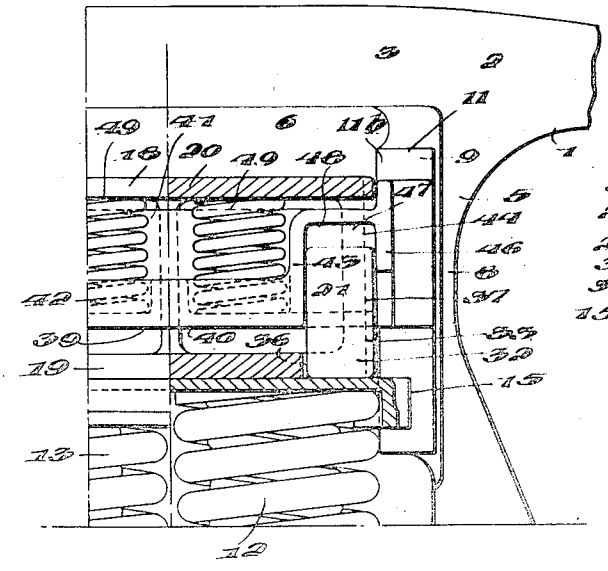


Fig. 3.



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UNITED STATES PATENT OFFICE

2,465,966

RAILWAY TRUCK

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Application January 7, 1944, Serial No. 517,421

30 Claims. (Cl. 105—197)

1

The invention pertains to a railway truck and more particularly to a spring plankless type thereof wherein the bolster movement is controlled at all times.

An object of the invention is the provision, in a railway truck, of a bolster having removable means associated with an outer extremity thereof and being adapted to facilitate a quick wheel change.

Another object of the invention is to provide, in a railway truck, a bolster having component parts so arranged and constructed and related to an associated side frame that the bolster will maintain a squared or predetermined relationship with respect to the side frame.

A further object of the invention is to provide, in a railway truck, a bolster having removable components disposed outwardly of a side frame and arranged to contact constantly portions of the side frame to create frictional forces and thereby disturb, arrest and interrupt harmonic or synchronous actions of bolster supporting coil springs.

An additional object of the invention is to provide, in a railway truck, a standard side frame carrying a set or nest of all coil springs acting as a yieldable support for a superimposed bolster, with the bolster having integral lugs engaging inner faces of the side frame and removable means resiliently urged against outer faces of the side frame to snub or control the action of the all coil springs.

These and other objects of the invention will become apparent from the succeeding description considered together with the accompanying drawings wherein:

Figure 1 is a horizontal view taken through vertically spaced horizontal planes of a railway truck embodying the present invention.

Figure 2 is a partial side elevational view and a partial sectional view taken along the lines 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a partial sectional view taken along the lines 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a vertical sectional view taken along the lines 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a vertical sectional view taken along the lines 5—5 of Figure 2, looking in the direction of the arrows.

Figure 6 is a vertical sectional view taken along the lines 6—6 of Figure 2, looking in the direction of the arrows.

2

Referring now to the drawings, wherein like reference characters indicate like parts, the numeral 1 is employed to designate, in a somewhat general manner, a railway truck exemplifying the present invention and being of a type devoid of a spring plank. The railway truck comprises a side frame 2 which is, and preferably may be, of standard design in that it contains a usual top or compression member 3 spaced vertically from an intermediate horizontal portion of a bottom or tension member 4 which are joined by transversely spaced, vertically extending struts or guide columns 5 all defining a window or opening 6 therebetween. Each guide column is of general channel-configuration in horizontal cross section and to this extent comprises a transverse web 7 terminating in or merging into laterally spaced legs 8. As in a side frame of standard design, the upper extremities of the struts are closer together than the lower extremities thereof so as to accommodate related structures. It is of general knowledge that the lower area of the window or opening 6 accommodates a spring group employed to resiliently support a superimposed bolster, the latter of which occupies the upper area of the opening. Also it is of common knowledge that in standard designs, the bolster is provided with integral lugs inwardly and outwardly of the side frame and in order to effect a separation of the bolster and side frames in this type of a truck, the bolster supporting springs are first removed and the bolster extremity is lowered into the wide area normally occupied by the springs where, from this position, the side frame may be removed laterally of the truck away from the bolster.

Due to conditions which will be hereinafter explained, the upper extremity of each guide column is desirably provided with a channel-shaped wear plate 9 presenting rubbing faces 10 and 11 of which the former is disposed transversely of the truck to define the upper area of the window or opening 6 and the latter presenting longitudinally directed continuations of the former in the form of an inner face 11*a* and an outer face 11*b*. Seated upon the intermediate horizontal portion of the tension member within the lower area of the window or opening between the struts is a nest or group of resilient or yieldable means 12 formed by a plurality of all coil or helical springs 13 interposed between a bottom spring plate 14 superimposed on the tension member and a top spring plate 15. If desired, nibs 16 may be formed on the tension member to be accommodated by suitable aper-

tures in the bottom spring plate to afford an interlocking means whereby the spring group is prevented from shifting in any direction from a predesignated location. It might be added that the portion of the top spring plate adjacent to the struts is formed with recesses 17 into which extend the guide columns to prevent an unwarranted displacement of the top spring plate. However, sufficient clearance is provided between the top spring plate and columns to prevent contact or a rubbing action at this location.

Disposed within the upper area of the window in the side frame is an extremity 18 of a bolster which forms a load carrying member and extends transversely of the truck intermediate the ends of the side frame. The bolster extremity in the instant case, as usual, bears upon and is supported by the group or nest of all coil springs to have a yielding support therebeneath in transmitting loads from the bolster to the side frame. Because of imperfections in tracks along which a railway truck travels such as cross-overs, rail joints, switches, etc., certain recognized external impulses or shocks are delivered to the entire truck structure and particularly in the bolster supporting springs, these shocks or impulses appearing at regular periodic intervals will set up a harmonic or synchronous spring action causing, if unarrested, the springs to go solid and expand beyond their normal or permissive expansive limits. If this spring action is not snubbed or checked it will be appreciated that destructive blows will be imparted to the truck structure. With the above possible spring action in mind, the bolster is arranged and constructed to frictionally engage the guide columns to thereby create frictional forces to disturb, arrest and prevent any harmonic bolster supporting spring actions.

As exemplary of such a bolster arrangement and construction, the bolster in the present illustration is formed generally by a bottom or lower wall 19 bearing upon the top spring plate and having spaced vertically therefrom a top or upper wall 20 both of which extend through the bolster opening outwardly of the truck beyond the vertical limits of the slide frame. It will be noted that the top and bottom bolster walls are, within the confines of the window and outwardly of the truck therebeyond, so formed that no part or parts of these walls extend in a horizontal direction beyond the faces 10 carried by the columns for the reason which will be hereinafter explained. The top and bottom walls are joined by integrally formed, longitudinally spaced side walls 21 which terminate at or adjacent the horizontally extended plane of the vertical outer column faces 11*b*. Outstanding from the bolster side walls inwardly of the truck from the side frame but in close proximity thereto are oppositely directed lugs 22 which overlie the columns in spaced relation thereto and are adapted to react against the columns to limit a movement of the bolster transversely of the truck. Firmly secured to the bolster by means of welds (not shown) or any other suitable means, are angle-shaped wear plates 23 each having a leg 24 substantially coextensive with an associated bolster lug and an arm 25 carried by the related portion of the bolster side wall which extend from the lug toward the end of the bolster. The leg of each angle-shaped wear plate carries an outwardly disposed face 26 which bears preferably, but not necessarily, at all times against a face 11*a* of the adjacent column so that not only is the bolster definitely arrested from moving in a direction transversely of the truck but frictional forces are created on the contiguous faces 26 and 11*a* to assist in snubbing or controlling the action of the all coil springs forming the bolster support. The arm of each angle-shaped wear plate carries a plane face 27 which is normally spaced from but adapted to contact the face 10 of the adjacent column. This clearance between the faces 27 and 10 is believed necessary due to a rocking action of a side frame during service caused by the wheels of the truck getting out of horizontal alignment because of irregularities inherent in the truck supporting tracks.

Extending between the top and bottom bolster walls outwardly of the side frame is a pair of stanchions, posts or braces 28 formed integrally with the bolster walls and being of general T configuration in horizontal cross section. The posts are each formed by a web 29 spaced inwardly of the truck from the bolster extremity and a perpendicularly disposed gusset 30 which reinforces the brace web against stresses to which it will be subjected in service. As will be noted by referring particularly to Figure 1 of the drawings, the stanchions are spaced apart, longitudinally of the truck, so that a post is positioned adjacent the extreme corner of the bolster outwardly of the side frame. The posts are provided with coplanar vertical surfaces 31 facing inwardly of the bolster and these surfaces together with the bolster bottom and top walls define a pocket or window extending through and opening outwardly of the bolster through the extended plane of the side walls longitudinally of the truck so that the bolster pocket is perpendicularly disposed relative to the side frame window.

Positioned within the confines of the bolster extremity outwardly of the side frame is a pair of wedge elements or triangular members 32 each formed by a continuous flange 33 joined through the center by an inner integral rib 34. Each web has a bottom portion 35 accommodated by a suitable recess or relief 36 formed in the bolster bottom wall so that each wedge projects through the bottom wall and is supported directly and maintained in a predetermined elevated position by the subjacent top spring plate. A plane vertical surface 37 on each web element is exposed outwardly and transversely of the truck and is in intimate contact with the surface 31 of a related stanchion so that the posts function as a barrier, preventing the displacement of the triangular members in a direction outwardly and transversely of the truck. An inclined face 38 is formed on an inner portion of each wedge element so as to present a surface disposed at an angle to the vertical and be directed inwardly of the truck and bolster.

The bolster window or pocket accommodates a housing, beam, bridge or shoe 39 bisecting the bolster extremity outwardly of the side frame and is formed in part by a cradle-like structure, generally U-shaped in vertical cross section and comprising a bottom or floor 40 having rising therefrom at the transverse limits thereof horizontally spaced, vertically extending inner and outer flanges or rails 41 and 42 respectively. The bridge floor is normally disposed an appreciable or predetermined distance above the bolster bottom wall while the inner and outer flanges, which are of different vertical extent, terminate short of the bolster top wall, thus permitting a vertical movement of the beam within the bolster and within certain predetermined limits. The beam outer flange is, in the proxim-

ity of the wedge elements, directed inwardly of the beam towards the inner flange thereof to form spaced reentrant flanges 43 which terminate in or merge into oppositely and angularly disposed partitions 44. The partitions are extended to the extreme limits of the bridge at opposite ends thereof and beyond the extended area of the side frame window where they blend into the ends of the bridge inner flange. The beam inner flange is provided with a plane vertical face 45 which spans the side frame window to bear against the spaced faces 11b carried by the side frame struts. Approximately at the position where the partitions back up the inner flange extremities there are provided end flanges 46 which reinforce the immediate area of the bridge as well as form, together with the associated reentrant flanges and partitions, cavities 47 for the accommodation of the wedge elements. By this arrangement, therefore, the bridge and wedge elements are definitely and positively interlocked to prevent an unwarranted separation of these members during service. As previously indicated, the partitions are inclined with respect to the vertical and, accordingly, carry sloping surfaces 48 disposed in the same general direction as and in intimate contact with, the wedge element inclined faces 38 and any tendency of the bridge to move toward the wedge elements will result in the beam being urged laterally toward the side frame so that frictional forces will be created at all times and throughout the entire range of bolster service movement, on the contacting faces 45 of the beam and 11b of the guide columns. These frictional forces will disturb and prevent a harmonic action of the bolster supporting springs and develop a railway truck having smooth or easy riding characteristics. By the presence of the beam and its constant, intimate relationship with the side frame guide columns, the bolster will at all times be maintained in squared relationship with the side frame to thereby present a rigid truck structure wherein its side frames cannot be displaced from a true predetermined transverse alignment.

Positioned within the housing or beam is a compressible or yieldable means illustrated in the form of a pair of coil or helical springs 49 which act between the bolster top wall and beam floor to maintain the surfaces 48 in bearing relation with the surfaces 38 and thereby insure constant contact between the beam surface 45 and the column surfaces 11b. A lug or boss 50 rises from the beam floor between the helical springs to function as a spacer in assisting to prevent a shifting of the springs.

Reference has been made in the objects of the invention to and some of the appended claims include preambles reciting a quick wheel change truck. The illustrated and described truck is of a quick wheel change type or character as will be observed when considering the bolster extremity together with its component parts being raised from its normal and disclosed position so that it more closely approaches the side frame top or compression member. At this stage the bolster end has been raised or removed from the top spring plate but since the wedge elements are supported by the top spring plate they are not disturbed by a movement of the bolster extremity away from the spring plate. The housing or beam during this bolster extremity raising procedure has, under the action of the coil springs 49, as well as the fact that its supporting

structure is in effect being lowered, moves downwardly until the beam floor rests directly upon the bolster bottom wall at which time the beam will be carried along with the bolster extremity. When, therefore, the bolster end has reached a predetermined elevated position the interlocking effect of the end flange 46 will have been removed, whereupon the wedges may be withdrawn entirely from the bolster window in a direction longitudinally of the truck. With the wedge elements out of the way, the beam and its accompanying springs may also be withdrawn from the bolster window in a direction longitudinally of the truck. With, therefore, the removable outer lug forming bridge separated from the bolster, the latter and the side frame may be easily separated sufficiently to effect a quick wheel change.

From the above, considered together with the accompanying drawings, it will be observed that numerous changes and alterations may be made to the illustrated and described construction or design without departing from within the spirit of the invention and scope of the appended claims.

I claim:

1. In a quick wheel change truck, the combination of, a side frame having spaced columns defining a window therebetween, a bolster end disposed within said window and having inner integral lugs arranged to contact said columns, a window in said bolster opening transversely of said bolster, wedge means in said bolster window, shoe means extending through said bolster window and interposed between said wedge means and columns, and means reacting against said bolster and shoe means.

2. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end disposed within said opening, means defining a window extending through said bolster transversely thereof and outwardly of said side frame, wedge means in said bolster window bearing against said window defining means, removable shoe means extending through said bolster window and interposed between said wedge means and columns, and means reacting vertically against said bolster and shoe means.

3. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end disposed within said opening, means defining a window extending through said bolster end transversely thereof and outwardly of said side frame, wedge means removably secured to said bolster within said window, shoe means extending through said window to overlie said columns, said shoe means being interlocked with said wedge means and arranged to be urged inwardly of said truck, and vertically acting resilient means interposed between said bolster and shoe means.

4. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end disposed within said opening, a window extending through said bolster extremity transversely thereof, vertical means formed in said bolster within the limits of said columns and defining one extremity of said window, wedge means in said window and bearing transversely of said truck against said vertical means, and resiliently urged bridge means extending through said window to overlie said columns, said bridge means

being arranged to contact said wedge means to thereby be directed towards said columns.

5. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end comprising spaced top and bottom walls and being disposed within said opening, vertical means outwardly of said side frame joining said top and bottom walls and disposed within the horizontal limits of said columns, wedge means within said bolster reacting horizontally against said vertical means and arranged to be inserted in said bolster end through said bottom wall, means associated with said bolster for supporting said wedge means, and shoe means having portions overlying said columns and being arranged to contact said wedge means and another means associated with said bolster to thereby be directed towards said columns.

6. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end comprising spaced top and bottom walls and being disposed within said opening, vertical means outwardly of said side frame joining said top and bottom walls and disposed within the horizontal limits of associated confronting faces of said columns, wedge means entirely within said bolster and in bearing relation with said vertical means, said wedge means being supported within said bolster and being arranged to be withdrawn from said bolster through said bottom wall, and removable shoe means interlocked with said wedge means and arranged to be in overlying relation to said columns; said shoe means being arranged to be withdrawn horizontally from said bolster.

7. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end within said opening and comprising top and bottom walls joined by spaced side walls, vertical means outwardly of said side frame and joining said top and bottom walls in spaced relation to said side walls, wedge means within said bolster end and in bearing relation with said vertical means, means supporting said wedge means, said wedge means being arranged to be withdrawn from said bolster through said bottom wall, and removable shoe means interposed between said top and bottom walls and said columns; said shoe means being interlocked with said wedge means and adapted to be removed horizontally from said bolster end.

8. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end within said opening and comprising top and bottom walls, vertical means outwardly of said side frame and formed integrally with said top and bottom walls, means reacting outwardly of said bolster against said vertical means and being entirely within the confines of said bolster and arranged to be withdrawn through said bottom wall, means supporting said last named means, and bridge means having portions overlying said columns and being in telescoping relation with said second named means; said bridge means being arranged to be withdrawn horizontally from said bolster end.

9. In a quick wheel change truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end within said opening and comprising top and bottom walls, a spring plate beneath said bolster bottom wall, vertical means outwardly of said side frame and connecting said top and bottom walls, means entirely within the confines of said bolster end and arranged to be withdrawn through said bottom wall, said means resting upon said spring plate and bearing against said vertical means, and bridge means having portions overlying said columns and being interlocked within said last named means; said bridge means being arranged to be withdrawn horizontally in said bolster end in a direction longitudinally of said truck.

10. In a quick wheel change truck, the combination of, a side frame having a top and bottom member joined by columns to define an opening therebetween, bolster supporting springs on said bottom member, a spring plate on said springs, a bolster end positioned within said opening and bearing upon said spring plate, lugs integral with said bolster end arranged to bear against inner faces of said columns, removable means within the confines of said bolster end bearing outwardly against said bolster and downwardly against said spring plate, and means extending through said bolster and in telescoping relation with said removable means; said last named means being arranged to bear against outer faces of said columns and removable from said bolster end longitudinally of said truck.

11. In a railway truck, the combination of, a side frame having spaced columns defining an opening therebetween, spring means within said opening, bolster means carried by said spring means, said bolster means comprising top and bottom walls joined by side walls and vertical means, lugs integral with said side walls and arranged to bear against associated faces of said columns, wedge means in substantial alignment with said side walls and bearing horizontally against said vertical means, means supporting said wedge means, shoe means interposed between said wedge means and outer surfaces of said columns, and resilient means acting between said bolster top wall and shoe means for maintaining said shoe means in constant contact with said column surfaces for snubbing the action of said spring means.

12. In a railway truck, the combination of, a side frame having spaced columns defining an opening therebetween, spring means within said opening, bolster means carried by said spring means, said bolster means comprising top and bottom walls joined by side walls, lugs integral with said side walls inwardly of said side frame and arranged to bear against associated faces of said columns, wedge means positioned outwardly of said side frame and reacting horizontally against upright means joining said top and bottom walls, means supporting said wedge means, said wedge means having surfaces inclined and facing inwardly of said truck, shoe means having surfaces in bearing relation with said inclined surfaces, and other surfaces in constant contact with associated outer surfaces of said columns to thereby maintain said bolster in squared relationship with said side frame, and resilient means interposed between one of said bolster walls and shoe means.

13. In a railway truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end positioned within said opening, means for maintaining said bolster end and side frame in squared relation-

ship, said means comprising lugs integral with and outstanding from side walls of said bolster to bear constantly against inner faces of said columns, removable wedge means associated with said bolster end outwardly of said side frame and having an inclined surface exposed inwardly of said truck, a bridge member extending through said bolster and having inclined surfaces bearing against said inclined surfaces of said wedge means, other surfaces of said bridge means bearing constantly against outer faces of said columns, and spring means reacting against a wall of said bolster to urge said bridge means against said wedge means.

14. In a railway truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end positioned within said opening, means for maintaining said bolster and side frame in squared relationship, said means comprising lugs outstanding from said bolster end to bear constantly against inner faces of said columns, an inclined surface carried by said bolster outwardly of said side frame and facing inwardly of said truck, means extending through said bolster overlying said columns and carrying an inclined surface bearing against said first named inclined surface, said last named means having spaced surfaces bearing constantly against outer faces of said columns, and resilient means reacting against a wall of said bolster to urge said last named means against said first named inclined surface.

15. In a railway truck, the combination of, a side frame having spaced columns each formed by a transverse web merging into longitudinally directed legs, a bolster disposed between said spaced columns, means for maintaining said bolster and side frame in squared relationship, said means comprising side walls in said bolster parallel to and spaced from said column webs, an inclined surface associated with said bolster entirely outwardly of said side frame, bridge means extending longitudinally of said truck through said bolster, an inclined surface on said bridge means in intimate contact with said first named inclined surface and arranged to direct said bridge means inwardly of said truck, a surface on said bridge means in intimate contact with outer faces of said column legs, and spring means within said bridge means reacting against a wall of said bolster for maintaining the aforesaid relationship between all of said inclined surfaces.

16. In a railway truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end disposed within said opening, spring means supporting said bolster end, means associated with said bolster end for snubbing the action of said spring means, said means comprising a pair of removable wedges bearing against upright members of said bolster outwardly of said side frame, a bridge member interposed between said wedges and columns and in constant bearing relation with outer faces of said columns, said bridge member being interlocked with said wedges, and resilient means acting between a wall of said bolster and said bridge means for maintaining said bridge means bearing against said wedges and column faces.

17. In a railway truck, the combination of, a side frame having spaced columns defining an opening thereby, a set of coil springs carried by said side frame within said opening, a spring plate superimposed on said coil springs, a bolster end within said opening and resting on said said spring plate, lugs outstanding from said bolster inwardly of said truck and arranged to contact said columns to prevent movement of said bolster transversely of said truck, a window in said bolster end outwardly of said side frame and extending perpendicularly to said side frame opening, stanchions extending between upper and lower walls of said bolster end outwardly of said side frame, wedges in alignment with and bearing against said stanchions, said wedges resting on said spring plate, and bridge means extending longitudinally of said truck through said bolster window and having portions thereof contacting said wedges and outer faces of said columns.

18. In a railway truck, the combination of, a side frame having spaced columns defining an opening thereby, a set of coil springs carried by said side frame within said opening, a spring plate superimposed on said coil springs, a bolster end within said opening and resting on said spring plate, a window in said bolster end outwardly of said side frame, stanchions extending between upper and lower walls of said bolster outwardly of said side frame to define the outer limits of said window, wedges bearing against said stanchions and resting on said spring plate, and integral bridge means extending longitudinally of said truck through said bolster window and having portions thereof contacting said wedges and outer faces of said columns.

19. In a railway truck, the combination of, a side frame having spaced columns defining an opening thereby, a set of all-coil springs carried by said side frame within said opening, a spring plate superimposed on said coil springs, a bolster end within said opening and resting on said spring on said spring plate, a window in said bolster end outwardly of said side frame and extending perpendicularly to said side frame opening, stanchions extending between upper and lower walls of said bolster outwardly of said side frame, wedge means in alignment with and bearing against said stanchions, said wedge means resting upon said spring plate, and an integrally formed bridge means extending longitudinally of said truck through said bolster window and being resiliently urged toward said wedges; said bridge means having portions thereof contacting and interlocked with said wedges and having extremities bearing constantly against outer faces of said columns.

20. In a railway truck, the combination of, a side frame having spaced columns defining an opening thereby, a set of coil springs carried by said side frame within said opening, a spring plate superimposed on said coil springs, a bolster end within said opening and resting on said spring plate, spaced top, bottom and end means defining a window in said bolster outwardly of said side frame, wedge means resting on said spring plate and having inclined surfaces facing inwardly of said truck and directed upwardly and outwardly of said truck, said wedges bearing against said bolster end means, a beam extending through said window and having faces beyond the bolster bearing against outer faces of said columns, said beam having spaced inclined surfaces in bearing relation with said wedge means inclined surfaces, and spring means interposed between said beam and bolster top means.

21. The improvement in truck bolsters of the type comprising vertically spaced top and bottom walls joined by side walls to form a box-like structure arranged to be associated with an opening in a side frame, wherein said top and bottom walls

have means formed integrally therewith outwardly of said truck in spaced relation to said side walls, and sloping surfaces associated with said means; said sloping surfaces being directed inwardly and downwardly of said bolster to face toward said side walls.

22. In a railway truck, the combination of, a side frame having spaced columns defining an opening therebetween, a bolster end positioned within said opening, an inclined surface directed inwardly and downwardly associated with said bolster outwardly of said columns, means extending through said bolster overlying said columns and carrying an inclined surface operatively associated with said first named inclined surfaces, said last named means having spaced surfaces bearing constantly against outer faces of said columns, and resilient means acting against a wall of said bolster to maintain said last named means in a predetermined position.

23. The improvement in a shoe for use with a bolster of a railway truck wherein said shoe comprises a plane surface arranged to span and engage surfaces of side frame columns, sloping coplanar surfaces opposed to and spaced from said first named surface, said sloping surfaces being directed downwardly toward said first named surface.

24. The improvement in a shoe for use with a bolster of a railway truck wherein said shoe comprises a vertically disposed surface arranged to span and engage surfaces of side frame columns, sloping coplanar surfaces opposed to and spaced from said vertically disposed surface, said sloping surfaces being directed downwardly and toward said vertically disposed surfaces, and means intermediate said sloping surfaces arranged to receive forces from an associated spring.

25. In a railway truck of the type having a side frame comprising vertical columns defining an opening therebetween and a spring supported bolster positioned within said opening, the combination of, posts in said bolster outwardly of the plane of said columns, sloping surfaces associated with said posts, bridge means spanning said columns, sloping surfaces associated with said bridge means bearing against said first named sloping surfaces, and spring means for urging said bridge means into engagement with said first named sloping surfaces and said columns.

26. In a railway truck of the type having a side frame comprising vertical columns defining an opening therebetween and a spring supported bolster positioned within said opening, the combination of, posts carried by said bolster outwardly of the plane of said columns, sloping surfaces associated with said posts outwardly of the plane of said columns, bridge means spanning said columns, sloping surfaces associated with said bridge means and bearing against said first named sloping surfaces, and spring means acting between said bolster and bridge means for urging the latter toward said first named sloping surfaces.

27. In a railway truck of the type having a side frame comprising vertical columns defining an opening therebetween and a spring supported bolster positioned within said opening, the combination of, means having surfaces sloping downwardly and inwardly of said truck arranged to move vertically with said bolster, bridge means spanning and arranged to contact said columns, sloping surfaces associated with said bridge means in contact with said first named sloping surfaces, and spring means interposed between said bolster and bridge means for urging the latter toward said first named sloping surfaces.

28. In a railway truck of the type having a side frame comprising vertical columns defining an opening therebetween and a spring supported bolster positioned within said opening, the combination of, means having surfaces arranged to move vertically with said bolster and sloping downwardly and inwardly of said truck, bridge means outwardly of said side frame extending through said bolster and arranged to contact said columns, downwardly and inwardly sloping surfaces associated with said bridge means and disposed in intimate contact with said first named sloping surfaces, and spring means interposed between said bridge means and bolster.

29. In a railway truck of the type having a side frame comprising vertical columns defining an opening therebetween and a spring supported bolster positioned within said opening, the combination of, vertical means formed integral with said bolster outwardly of said side frame, sloping surfaces associated with said vertical means and sloping downwardly and inwardly of said truck, bridge means arranged to contact said columns, downwardly and inwardly sloping surfaces associated with said bridge means and contacting said first named sloping surfaces, and spring means for urging said bridge means downwardly of said truck.

30. In a railway truck of the type having a side frame comprising vertical columns defining an opening therebetween and a spring supported bolster positioned within said opening, the combination of, vertical means formed integral with said bolster outwardly of said side frame, spaced sloping surfaces associated with said vertical means within said bolster and sloping downwardly and inwardly of said truck, bridge means arranged to contact said columns outwardly of said side frame, downwardly and inwardly sloping surfaces carried by said bridge means and contacting intimately said first named sloping surfaces, and vertically acting resilient means within said bolster for urging said bridge means downwardly of said truck.

GLENN F. COUCH.

REFERENCES CITED

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